

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* WOLFGANG KAUFHOLD, FRIEDEMANN MULLER,  
WOLFGANG BRAUER, ULRICH LIESENFELDER  
and HERBERT HEIDINGSFELD

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**MAILED**

**JUL 23 2003**

**PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Appeal No. 2003-1029  
Application No. 09/555,921

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ON BRIEF

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Before KIMLIN, JEFFREY T. SMITH and MOORE, *Administrative Patent Judges*.  
JEFFREY T. SMITH, *Administrative Patent Judge*.

***DECISION ON APPEAL***

Applicants appeal the decision of the Primary Examiner finally rejecting claims 1 to 5, 7 and 9.<sup>1, 2</sup> We have jurisdiction under 35 U.S.C. § 134.

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<sup>1</sup> In rendering our decision, we have considered Appellants' arguments presented in the Brief, filed July 30, 2002 and the Reply Brief, filed December 23, 2002.

<sup>2</sup> The Appellants have indicated that claims 6 and 8 have been cancelled. (Brief, p. 2).

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***CITED PRIOR ART***

As evidence of unpatentability, the Examiner relies on the following references:

Rausch et al. (Rausch)	3,642,964	Feb. 15, 1972
Ullrich et al. (Ullrich)	3,963,679	Jun. 15, 1976
Kirchmeyer et al. (Kirchmeyer)	5,739,252	Apr. 14, 1998 (filed May 31, 1996)

The Examiner has rejected claims 1, 3 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 102 (b) as anticipated by Ullrich; claims 1, 3 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 102 (b) as anticipated by Kirchmeyer; claims 1 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Ullrich and Rausch; and claims 1 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Kirchmeyer and Rausch. (Answer, pp. 4 to 7).

Rather than reiterate the conflicting viewpoints advanced by the Examiner and Appellants concerning the above-noted rejections, we refer to the Answer and the Briefs.

***DISCUSSION***

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by both the Examiner and Appellants in support of their respective positions. This review leads us to conclude that the Examiner's § 102

rejections are not well founded. However, we will uphold the Examiner's § 103 rejections.

Appellants' invention is directed to a process for the continuous production of thermoplastic polyurethane (TPU) elastomers comprising homogenizing in a reactor, for not more than 5 seconds, a mixture of (A) polyisocyanate, (B) a mixture of compounds having Zerewitinoff-active hydrogen atoms and (C) 0-20 wt% of other additives. In Appellants' process the temperatures of components (A) and (B) differ by less than 20° C before they are brought together in the reactor. According to Appellants, the process of minimizing the temperature difference between the starting materials before mixing produces TPU with improved homogeneity and melting behavior. (Specification, p. 2).

Claim 1, which is representative of the claimed invention, appears below:

1. A process for the continuous production of thermoplastic polyurethane elastomers in which  
  
one or more polyisocyanates (A) and  
  
a mixture (B), with Zerewitinoff-active hydrogen atoms, comprising  
  
B1) 1 to 85 equivalent- %, with respect to the isocyanate groups in (A), of one or more compounds with on average at least 1.8 Zerewitinoff-active hydrogen atoms and an average molecular weight  $M_n$  of 450 to 10,000,  
  
B2) 15 to 99 equivalent-% (with respect to the isocyanate groups in (A)) of one or more chain lengthening agents with an average at least 1.8

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Zerewitinoff-active hydrogen atoms and a molecular weight of 60 to 400,  
and

0-20 wt% with respect to the total amount of TPU, of further auxiliary  
agents and additives (C)

are homogeneously premixed in a reactor within a period of at most 5  
seconds, wherein the difference between the temperatures of components  
(A) and (B), before entering the reactor, is  $<20^{\circ}$  C.

Rejections under § 102

In order for a claimed invention to be anticipated under 35 U.S.C. § 102, all of the  
elements of the claim must be found in one reference. *Scripps Clinic & Research  
Found. v. Genentech Inc.*, 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir.  
1991).

The invention of claim 1 requires the difference between the temperatures of  
components (A) and (B) to be less than  $20^{\circ}$  C before entering the reactor. The Examiner  
acknowledges that neither Ullrich or Kirchmeyer discloses the temperature of the reactant  
prior to mixing in the reactor. However, the Examiner states "it is reasonable to conclude  
that at some point these species would have had the same temperature.... Appellants'  
claims merely require the temperature condition to be satisfied at some point prior to the  
reactants entering the reactor, and this condition may be satisfied while the reactants are  
being transported, stored, or removed from storage." (Answer, p. 4).

The Appellants assert that the components (A) and (B) differ by less than 20° C upon their respective introduction into the static mixer or extruder (i.e., the reactor). (Reply Brief, p. 3). The description of the invention in the specification supports the Appellants' position. The specification discloses that the components (A) and (B) are mixed homogeneously in a reactor within a period of at most 5 seconds. The specification discloses the components are heated separately before the components are introduced into the reactor. Further, the specification states that "it is essential that the temperature of the two components (A) and (B) differ by less than 20° C before being introduced into the reactor." (Specification, p. 8).

During patent prosecution, claims are to be given their broadest reasonable interpretation consistent with the specification, and the claim language is to be read in view of the specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1053-54, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). In the present case, the specification supports Appellants' position. Consequently, we interpret the claimed invention to require that the components (A) and (B) differ by less than 20° C upon their respective introduction into the reactor.

We cannot support the Examiner's position. The Examiner has not directed us to evidence that the inventions of either Ullrich or Kirchmeyer meet the claimed temperature

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requirement. The Examiner asserts, Answer, page 5, that the temperature condition of the claims is inherent in the Ullrich and Kirchmeyer references. However, *inherency* cannot be established by probabilities or possibilities. *See In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981). As stated in *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (quoting from *In re Oelrich*, 666 F.2d at 581, 212 USPQ at 326), “[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient [to establish inherency]” (emphasis in original). Under these circumstances, we cannot conclude that the Examiner has met the minimum threshold of establishing inherency under 35 U.S.C. § 102. Therefore, the rejections of claims 1, 3 to 5, 7 and 9 under § 102 are reversed.

Rejections under § 103

Appellants have indicated that with respect to the § 103 rejections the claims stand or fall together. (Brief, p. 3). Accordingly, all the claims will stand or fall together, and we select claim 1 as representative of the rejected claims. Note *In re King*, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); *In re Sernaker*, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983). 37 CFR § 1.192 (c)(7) and (8) (2001).

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The Examiner rejected claims 1 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Ullrich and Rausch; and claims 1 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Kirchmeyer and Rausch.

The Examiner has found that both Ullrich and Kirchmeyer disclose continuous production of polyurethane elastomers where the reactant components are rapidly mixed prior to reaction so as to obtain a uniform mixing and reaction. According to the Examiner, Ullrich discloses the use of static mixers and Kirchmeyer discloses the use of a double screw extruder. (Final Rejection, p. 3; Answer, p. 5). Appellants have not disputed the Examiner's factual determination in either Brief.

The Examiner recognized that neither Ullrich or Kirchmeyer discloses the claimed temperature requirement. To remedy this deficiency, the Examiner relied on the Rausch reference. According to the Examiner, Rausch exemplifies the process of producing a polyurethane wherein the isocyanate component and the active hydrogen component are introduced into the reactor at the same 140° F temperature. (Answer, p. 6). Rausch discloses the products produced according to the described process have homogeneity and reproducibility of physical properties. (Col 10, ll. 40 to 54). The Examiner concludes that a person of ordinary skill in the art would have been motivated to introduce the

reaction components of the primary references at the same temperature, as exemplified in Rausch, with the expectation that uniform and homogeneous mixtures would result.  
(Answer, p. 6).

Appellants have not specifically addressed the Examiner's discussion of Rausch's examples where the isocyanate component and the active hydrogen component are introduced into the reactor at the same 140° F temperature. Rather, Appellants state "[t]he Examiner's assertion that the reactant streams are at equivalent temperatures is in opposition with the state of the art as discussed above. Moreover, the Examiner's contention that Rausch et al., in connection with the temperatures of the reactant feed streams, represents common processing techniques is clearly in error."<sup>3</sup> (Brief, p. 7).

We are not persuaded by Appellants' argument. Rausch exemplifies that in the process of producing polyurethane, the isocyanate component and the active hydrogen component are introduced into the reactor at the same temperature. Thus, a person of ordinary skill in the art would have reasonably expected, when performing the process of either Ullrich or Kirchmeyer, that the isocyanate component and the active hydrogen component would have been introduced into the reactor at the same temperature and

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<sup>3</sup> In support of their position Appellants cited several prior art references. (Brief, p. 5; Reply Brief, pp. 3-4). Contrary to Appellants statement in the Brief (page 5), a copy of EP 708,124 was not enclosed with the Brief.



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achieve uniform and homogeneous mixtures and produced products that have homogeneity and reproducibility of physical properties. "For obviousness under § 103, all that is required is a reasonable expectation of success." *In re O'Farrell*, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). In light of the foregoing and for the reasons expressed in the Answer, it is our determination that the Examiner has established a *prima facie* case of obviousness.

Based on our consideration of the totality of the record before us, having evaluated the *prima facie* case of obviousness in view of Appellants' arguments and evidence, we conclude that the subject matter of claims 1 to 5, 7 and 9 would have been obvious to a person of ordinary skill in the art from the combined teachings of the cited prior art.

### **CONCLUSION**

The Examiner's rejections of claims 1, 3 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 102 (b) as anticipated by Ullrich and under 35 U.S.C. § 102 (e) as anticipated by Kirchmeyer are reversed. The Examiner's rejections of claims 1 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Ullrich and Rausch; and claims 1 to 5, 7 and 9 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Kirchmeyer and Rausch are affirmed.


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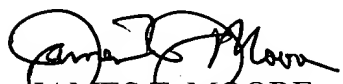
Time for taking action

No time period for taking any subsequent action in connection with this appeal  
may be extended under 37 CFR § 1.136(a).

**AFFIRMED**

  
EDWARD C. KIMLIN  
*Administrative Patent Judge*

  
JEFFREY T. SMITH  
*Administrative Patent Judge*

  
JAMES T. MOORE  
*Administrative Patent Judge*

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